

MS780-EC/ED Installation Procedure

Prepared by Educational Services
of
Digital Equipment Corporation

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INTRODUCTION

1

1.1 INTRODUCTION

The MS780-EC (240 V, 60 Hz) and the MS780-ED (240 V, 50 Hz) are 2-Mbyte memory assemblies that are installed in an expander cabinet. The unused module slots in the MS780-EC/ED 11-inch backplane can be completely populated with MS780-F memory assemblies to produce a 16-Mbyte MS780-E.

1.2 INSTALLATION KIT

An MS780-EC/ED installation kit includes:

1. 11-inch card cage/backplane assembly
2. H7100 power supply
3. H7103 power regulator (+ 5V @ 20A, - 5V @ 0.2A)
4. H7107 power regulator (+ 5V @ 20A, + 12V @ 1A)
5. AC/DC LO cable
6. Red + 5V cable
7. Black power return cable
8. Overtemperature cable
9. + 5BV cable
10. Two M8373 1-Mbyte memory modules
11. Two M8375 memory controller modules
12. M8376 SBI interface module
13. Blank modules
14. AWT revision status decal

Table 1–1 lists the MS780–F memory assemblies used to expand an MS780–EC/ED and their Mbyte sizes.

Table 1–1 MS780–F Memory Assemblies and Their Mbyte Sizes

Memory Assembly	Size (Mbytes)	Number of M8373 Modules
MS780–FA	2	2
MS780–FB	4	4
MS780–FC	6	6
MS780–FD	1	1
MS780–FF	10	10

1.3 VELOSTAT KIT

CAUTION: *The modules that make up the MS780–EC/ED memory system have components that can be damaged by electrostatic discharge (ESD). Do NOT handle modules without the use of a VELOSTAT kit (CD kit number A2–W0299–10).*

To set up the VELOSTAT kit, perform the following steps:

1. Unfold the VELOSTAT mat to full size (24 × 24 inches).
2. Attach the 15-foot ground cord to the VELOSTAT snap fastener on the mat and the alligator clip of the ground cord to a good ground on the VAX-11/780.
3. Attach the wrist strap to either wrist and the alligator clip to a convenient place on the mat.

Always lay removed modules on the VELOSTAT mat. When installing new modules, first place the module while still in the box on the mat. Then remove the module from the box and protective covering and lay the module flat on the VELOSTAT mat. This procedure brings the module to the same potential as the equipment and eliminates static discharge damage.

1.4 SOFTWARE REQUIREMENTS

The following system software is required to install the MS780–EC/CD:

1. VMS Version 3.2 or higher.
2. VMB.EXE Version 3 or higher.

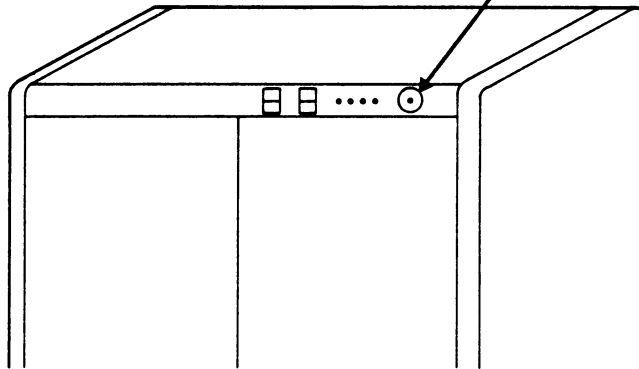
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INSTALLATION PROCEDURE 2

To install the MS780–EC/ED, perform the following steps:

- 1 Set the keyswitch on the CPU cabinet control panel to OFF.

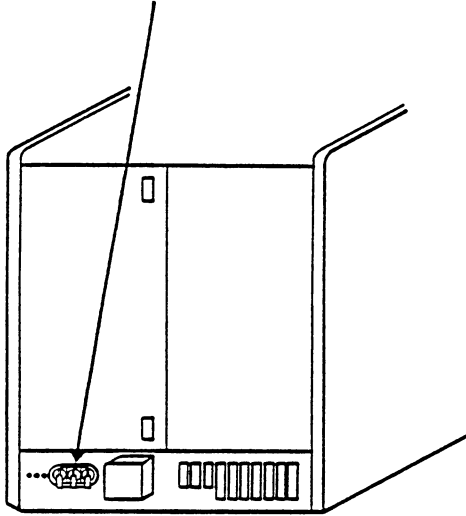
CAUTION: This does not turn off the memory power supply.



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6 INSTALLATION PROCEDURE

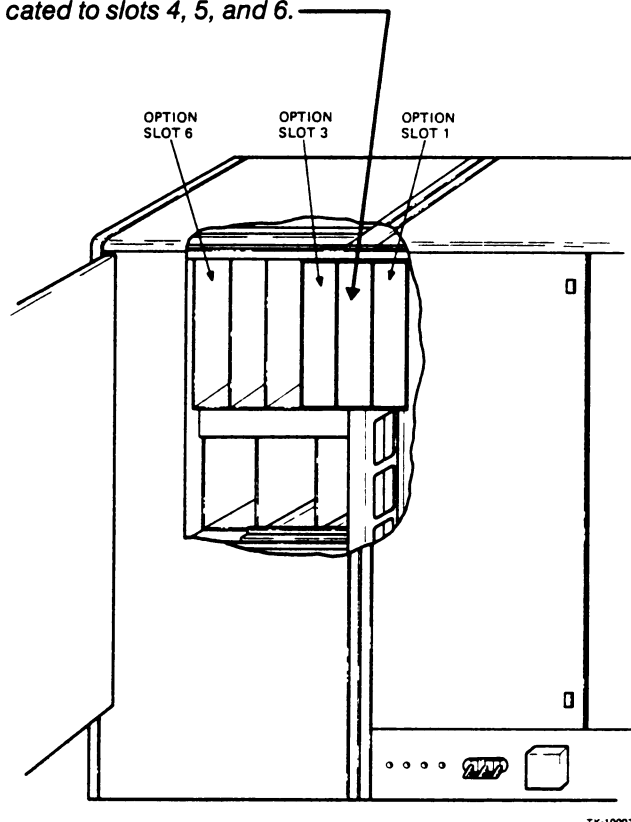
- 2 Set the main power circuit breaker at the lower back of the CPU cabinet to OFF (down).



TK-10010

- 3 Open the back and front doors of the expander cabinet.
- 4 Slide the air panels at the front of the expander cabinet to the right.
- 5 Remove the simulator panels from option slots 1, 2, and 3 in the expander cabinet.

NOTE: If slots 1, 2, and 3 are occupied, the equipment must be removed and relocated to slots 4, 5, and 6.

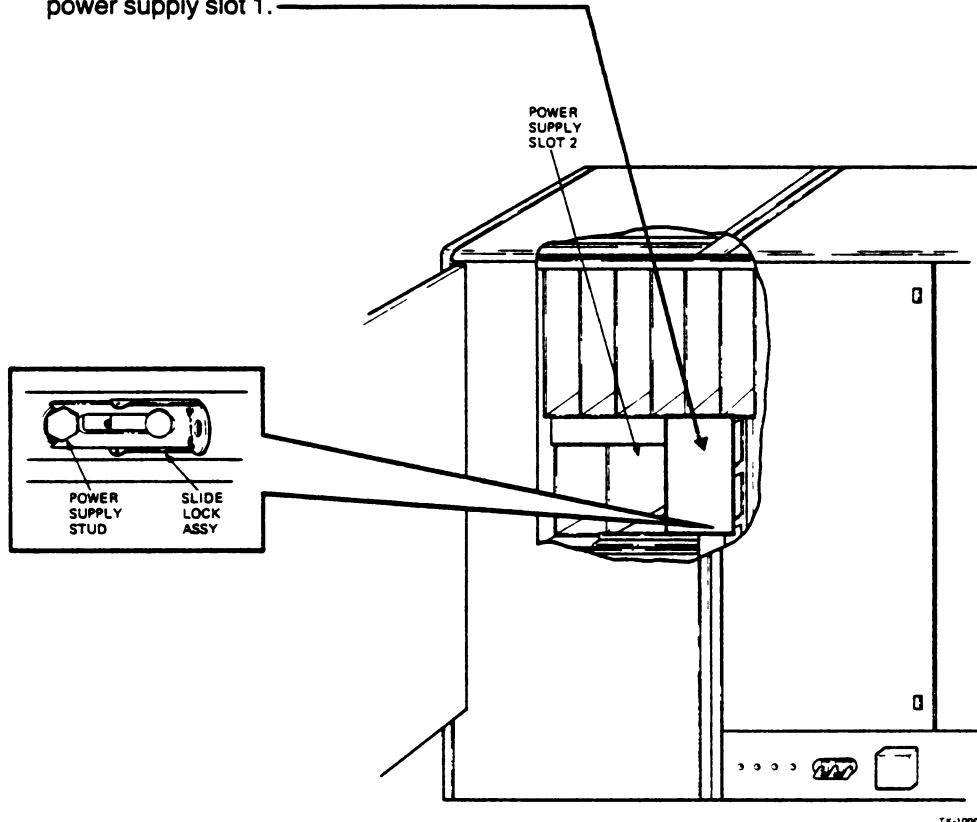


6 Relocate the system far-end terminator (SFT) as follows:

- a. Open the cabinet back door and remove the six SBI cables interconnecting the SFT and the adjacent unit.
- b. Disconnect the power plugs from SFT jacks J2, J8, and J9.
- c. Remove the SFT mounting hardware and carefully remove the SFT out of the back of the CPU cabinet.
- d. Replace the SFT with a blank SFT slot panel using the screws that held the original SFT.
- e. Install the SFT in the back of the CPU expansion cabinet to the left of the space for the MS780-E.
- f. Attach the SFT to the top and bottom of the CPU expansion cabinet card cage using the screws from the expansion cabinet.

8 INSTALLATION PROCEDURE

- 7 Install the MS780-E card cage/backplane assembly in option slots 1, 2, and 3.
- 8 Secure the MS780-E card cage/backplane assembly with three screws at the front bottom and three screws at the back top.
- 9 Unlock the slide lock and remove the screw securing the simulator panel in power supply slot 1.

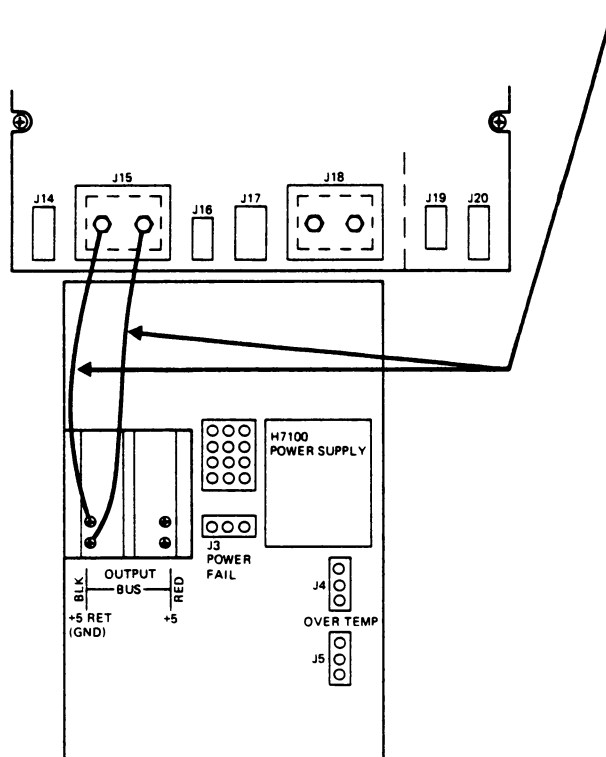


- 10 Remove the simulator panel from power supply slot 1.

NOTE: If a power supply has been installed in power supply slot 1, remove it and install it in power supply slot 2.

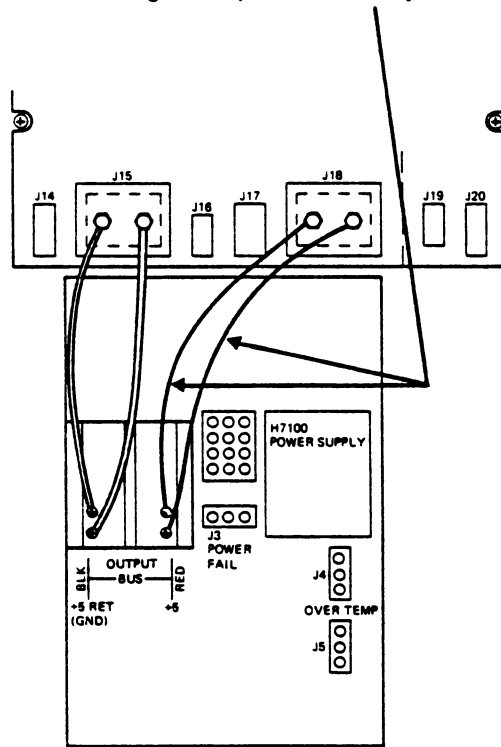
CAUTION: Only an MS780-E power supply (DIGITAL P/N E-IA-7018759-0-0) can be used with an MS780-E memory assembly.

- 11 Install the MS780-E power supply at the front of the expander cabinet in power supply slot 1.
- 12 Secure the MS780-E power supply at the rear of the expander cabinet with the slide lock assembly.
- 13 Secure the power supply at the top front with one screw.
- 14 Install black memory power return cables (DIGITAL P/N 7014250-0K) from the black +5V return (ground) output bus connector on the power supply to J15 on the MS780-E card cage/backplane assembly.



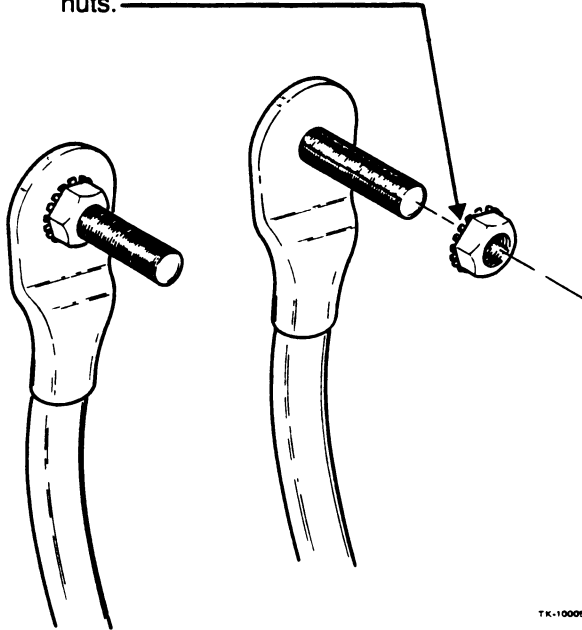
10 INSTALLATION PROCEDURE

- 15 Install red memory +5V power cables (DIGITAL P/N 7014529-0K) from the red +5V output bus connectors on the power supply to J18 on the MS780-E card cage/backplane assembly.



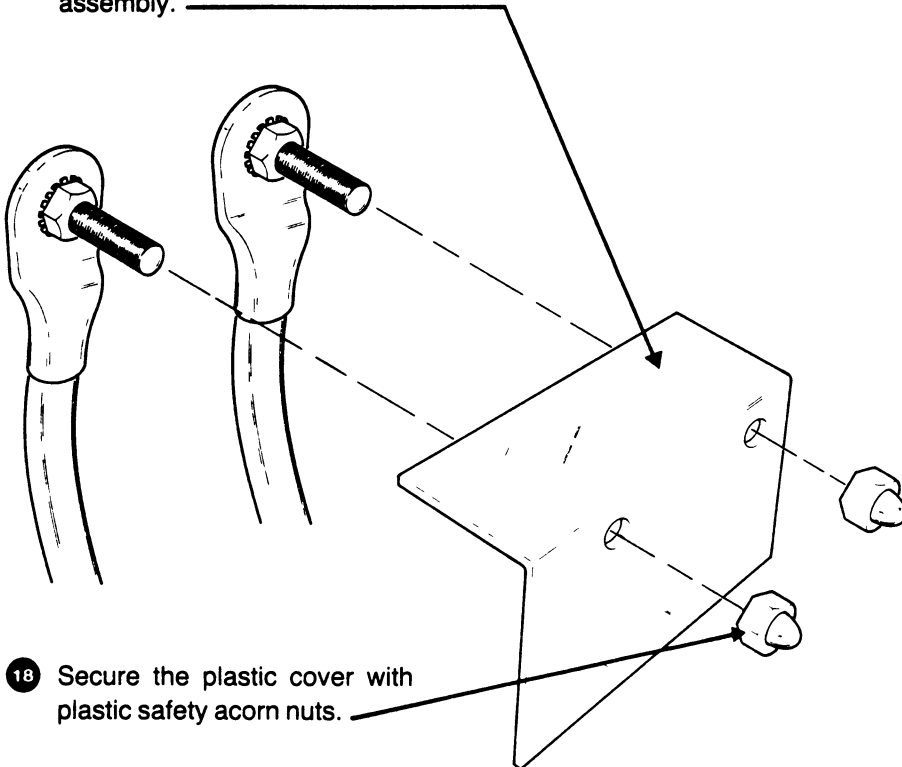
75-0000

- 16 Secure the power bus wiring (two red and two black) at the power supply and at J15 and J18 on the MS780-E card cage/backplane assembly with lock nuts.



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- 17 Install a plastic cover on J15 and J18 of the MS780-E card cage/backplane assembly.

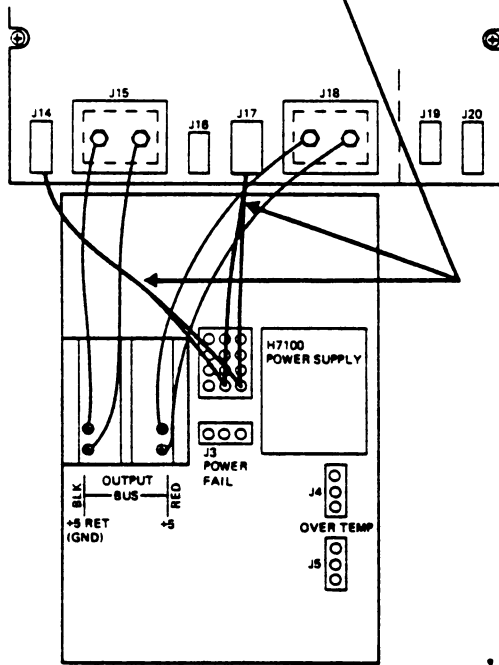


- 18 Secure the plastic cover with plastic safety acorn nuts.

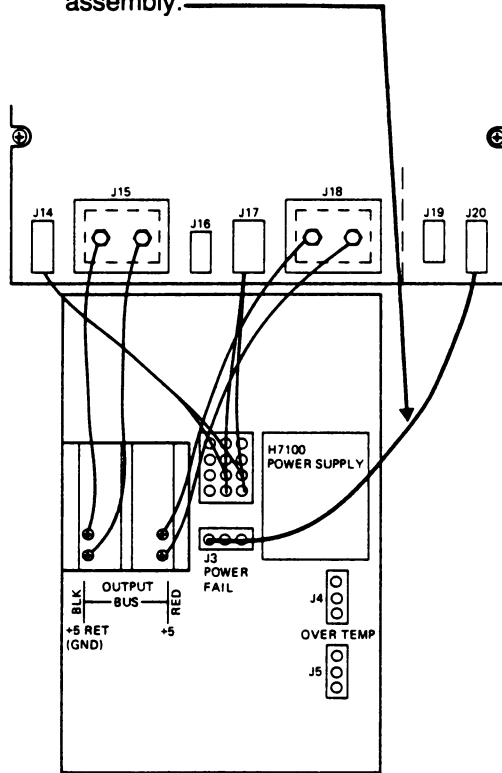
TK-0004

12 INSTALLATION PROCEDURE

- 19 Install ± 5 V and 12V cable (DIGITAL P/N 7014234-0K) from the 15-pin connector on the power supply to J14 and J17 on the MS780-E card cage/backplane assembly.



- 20 Connect the AC/DC LO cable (DIGITAL P/N 7014212-1C) from jack J13 power fail on the power supply to J20 on the MS780-E card cage/backplane assembly.



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- 21 Connect the - 5.2V cable (DIGITAL P/N 7015073-00) plug P5 to jack J19 on the MS780-E card cage/backplane assembly.
- 22 Connect the overtemperature cable (DIGITAL P/N D-IA-14213-0-000) from jack J5 on the power supply to the preceding power supply J5 in the CPU cabinet.
- 23 Connect J4 (other overtemperature cable) on the power supply to the following power supply J4. If there is no following power supply, omit this cable.

NOTE: The overtemperature cabling is daisy-chained from one power supply to the next using J4 and J5 on each supply. Therefore, the jack number is determined by the preceding power supply and can be either J4 or J5, whichever is unused.

4 INSTALLATION PROCEDURE

- 24 Install six 18-inch ribbon cables from MS780–E J7 through J12 to the last device in the CPU cabinet.

- 25 Install six ribbon cables from MS780–E to SFT (M9043).

NOTE: No cable connection is made to J16 on the MS780–E card cage/backplane assembly.

- 26 Determine transfer request (TR) jumper(s) and strapping configuration.

Table 2–1 Transfer Request Jumpers and Strapping Configuration

Memory Subsystem Level	Bus TR Level	J21 Pin Pairs				Connect Backplane Wire (Strap) from F11S1 to:
		H,J	E,F	C,D	A,B	
1	1	–	–	–	–	F11B1
2	2	–	–	–	I	F11E1
3	3	–	–	I	–	F11D1
4	4	–	–	I	I	F11F2

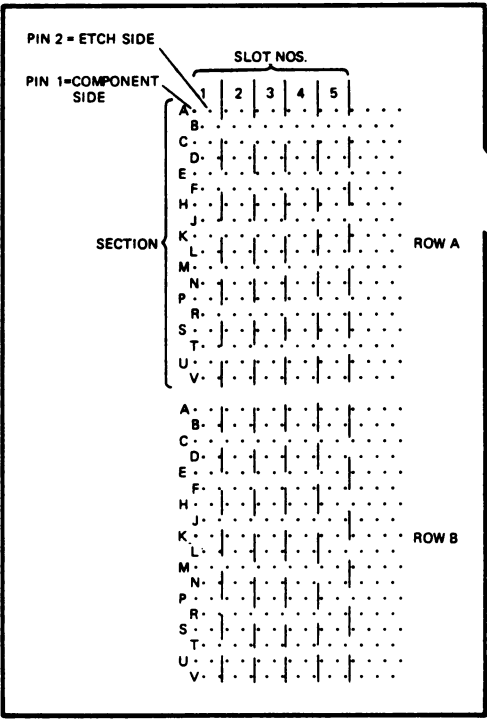
Notes:

1. I = Jumper installed.
2. – = Jumper not installed.
3. All MS780–E memory assemblies are manufactured as memory controller no. 1 and thus have F11S1 wired to F11B1.
4. If the VAX–11/780 is going to be configured with both MS780–E and MS780–C memory assemblies, then the MS780–E must be at the lower TR level and have its ROM enabled. All the other memory subsystems must inhibit ROM decode.

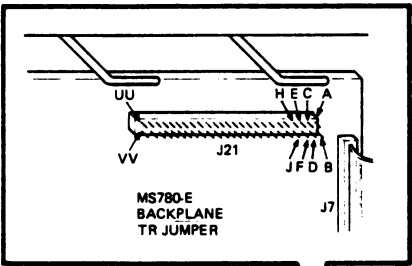
- 27 Install transfer request (TR) jumper(s) and strapping.

Strapping
from
F11S1 = { Row F
Slot 11
Section S
Pin 1

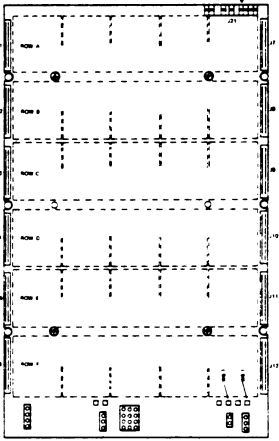
To
F11B1
for TR1 = { Row F
Slot 11
Section B
Pin 1



Jumper(s)



TR STRAPPING

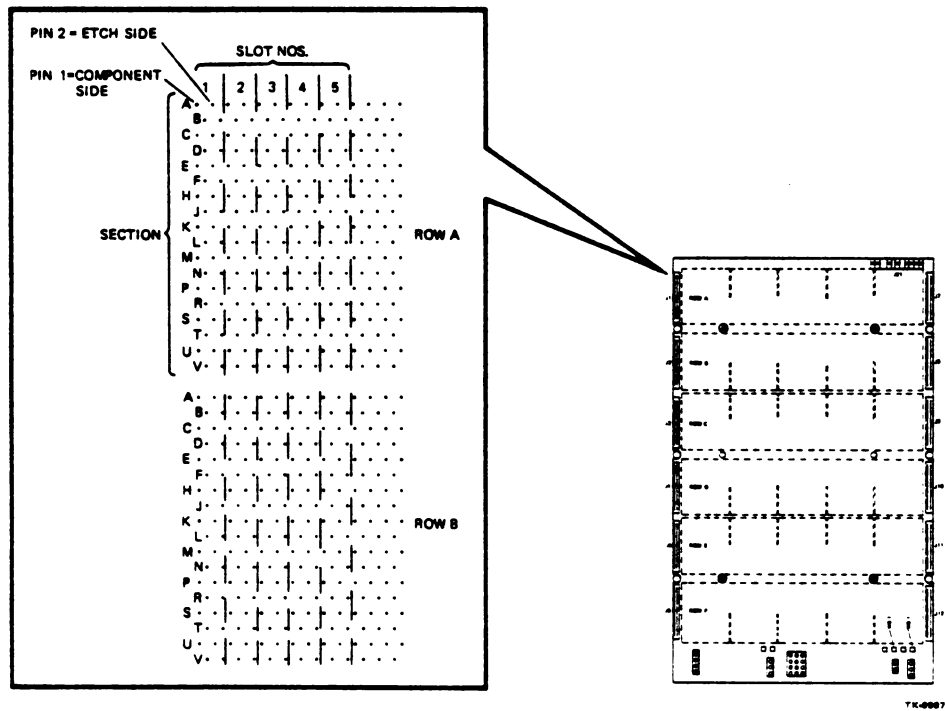


- 28 Fail strapping must be installed from C11R1 to C1V2 for all memory subsystems 1 through 4.

- 29 Install fail strapping.

From
C11R1 = { Row C
Slot 11
Section R
Pin 1

To
C1V2 = { Row C
Slot 1
Section V
Pin 2



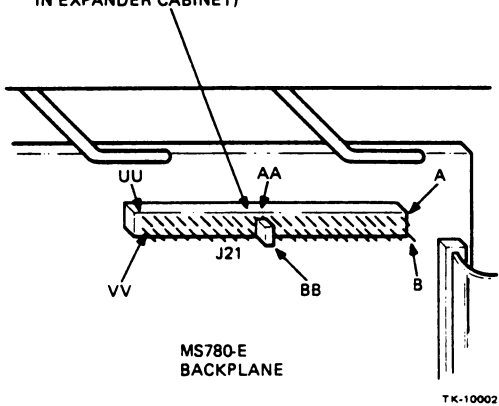
- 30 Determine IRD (inhibit ROM decode) jumper configuration.

Table 2-2 IRD Jumper Configuration

Memory Subsystem Level	IRD Jumper J21-AA to J21-BB
1	Not used
2	Installed
3	Installed
4	Installed

- 31 Install IRD jumper.

NOTE: JUMPER CONFIGURATION SHOWN FOR MEMORY CONTROLLER 1 (IN CPU CABINET), AND MEMORY CONTROLLER 2, 3, AND 4 (MS780-Es IN EXPANDER CABINET)



- 32 Determine starting address jumper and strapping (wire) configuration.

Table 2-3 Starting Address Jumpers and Strapping Configuration

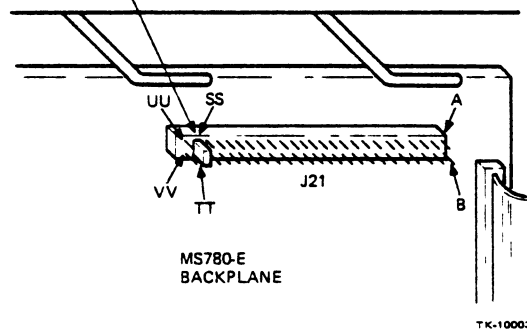
Memory Subsystem Level	J21-UU Jumper	J21-SS Jumper	Memory Subsystem Starting Address after Cold Power Start-Up Only
1	Not used	Not used	0 Mbyte
2	Not used	Installed	16 Mbyte
3	Installed	Not used	32 Mbyte
4	Installed	Installed	48 Mbyte

Note:

Starting address strapping is only used by the memory on cold power start-up, so each memory assumes some unique predefined address. The actual operating starting address is loaded to each memory subsystem by the software.

- 33 Install starting address strapping.

NOTE: J21-SS/J21-TT JUMPER SHOWN INSTALLED FOR 16 MBYTE STARTING ADDRESS



- 34 Install the MS780-E modules in the correct slots per the module utilization decal.

CAUTION: Do not place a controller module (M8375) in slot 11, which is the location for the SBI interface module. If this is done, -5V will be applied to a chip on the controller module and may short out the chip.

ARRAY NUMBER		MODULE UTILIZATION MS780 E/F			
7		20	M8373	1MB	*
6		19	M8373	1MB	*
5		18	M8373	1MB	*
4		17	M8373	1MB	*
3		16	M8373	1MB	*
2		15	M8373	1MB	*
1		14	M8373	1MB	*
0		13	M8373	1MB	*
		12	M8375	UPPER CONTROLLER	
		11	M8376	SBI INTERFACE	
		10	M8375	LOWER CONTROLLER	
0		9	M8373	1MB	
1		8	M8373	1MB	*
2		7	M8373	1MB	*
3		6	M8373	1MB	*
4		5	M8373	1MB	*
5		4	M8373	1MB	*
6		3	M8373	1MB	*
7		2	M8373	1MB	*
		1	M9040	SBI TERMINATOR	*
* OPTIONAL IF NOT INSTALLED USE BLANK MODULE 7014103					

PART NO. 3614746-01

TK-1000B

- 35 Uniformly reposition the air control panels in the expander cabinet.
- 36 Set the circuit breaker on the MS780-E power supply to the ON (up) position.
- 37 Close the expander cabinet front and back doors.
- 38 Set the main power circuit breaker at the lower back of the CPU cabinet to ON (up).
- 39 Set the keyswitch on the CPU cabinet control panel to ON.

40 Perform MS780–E diagnostics in the order listed below:

- | | | |
|----|-----------|---------------------------------|
| 1. | ESKAH | Microdiagnostic 1 |
| 2. | ESKAR | Microdiagnostic 3 |
| 3. | EVKAB | Architectural Instructions |
| 4. | EVRAA | Disk Reliability |
| 5. | VMS, UETP | User Environmental Test Package |

41 Install the MS780–EC/ED AWT revision status decal on the right or left front door frame.

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